WOCAT - World Overview of Conservation Approaches and Technologies

Questionnaire on Sustainable Land Management (SLM) Technologies

2019 Version

Contents

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Introduction to the questionnaire

About the WOCAT documentation of SLM practices

Welcome to WOCAT
WOCAT provides standardized, user-driven, open-access, globally-used tools and methods for the documentation and assessment of sustainable land management (SLM) practices. **SLM** in the context of WOCAT is defined as the sustainable use of land resources – including soils, water, vegetation, and animals. WOCAT focuses on efforts to prevent and reduce land degradation and restore degraded land through improved **land management technologies** and **approaches to implementing these**. All practices may be considered, whether they are indigenous, newly introduced through projects, or recent innovations by land users. All information documented through WOCAT questionnaires is made available in the Global SLM Database and can be used to spread SLM knowledge and improve decision-making for further implementation and dissemination of SLM practices.

Technology or Approach?
There are two separate questionnaires: one for Technologies and one for Approaches. Taken together, they provide the full picture of an SLM practice. Ideally, you would first fill in the questionnaires on SLM Technologies followed by the questionnaire on SLM Approaches. The difference between an SLM Technology and an SLM Approach is as follows:

*An **SLM Technology** is a physical practice that controls land degradation and enhances productivity and/ or other ecosystem services. A Technology consists of one or several measures, such as agronomic, vegetative, structural, and management measures.* Example: https://qcat.wocat.net/en/wocat/technologies/view/technologies_3359/	*An **SLM Approach** defines the ways and means used to implement one or several SLM Technologies. It includes technical and material support as well as the involvement and roles of different stakeholders. An Approach can refer to a project/ programme or to activities initiated by land users themselves.* Example: https://qcat.wocat.net/en/wocat/approaches/view/approaches_3173/

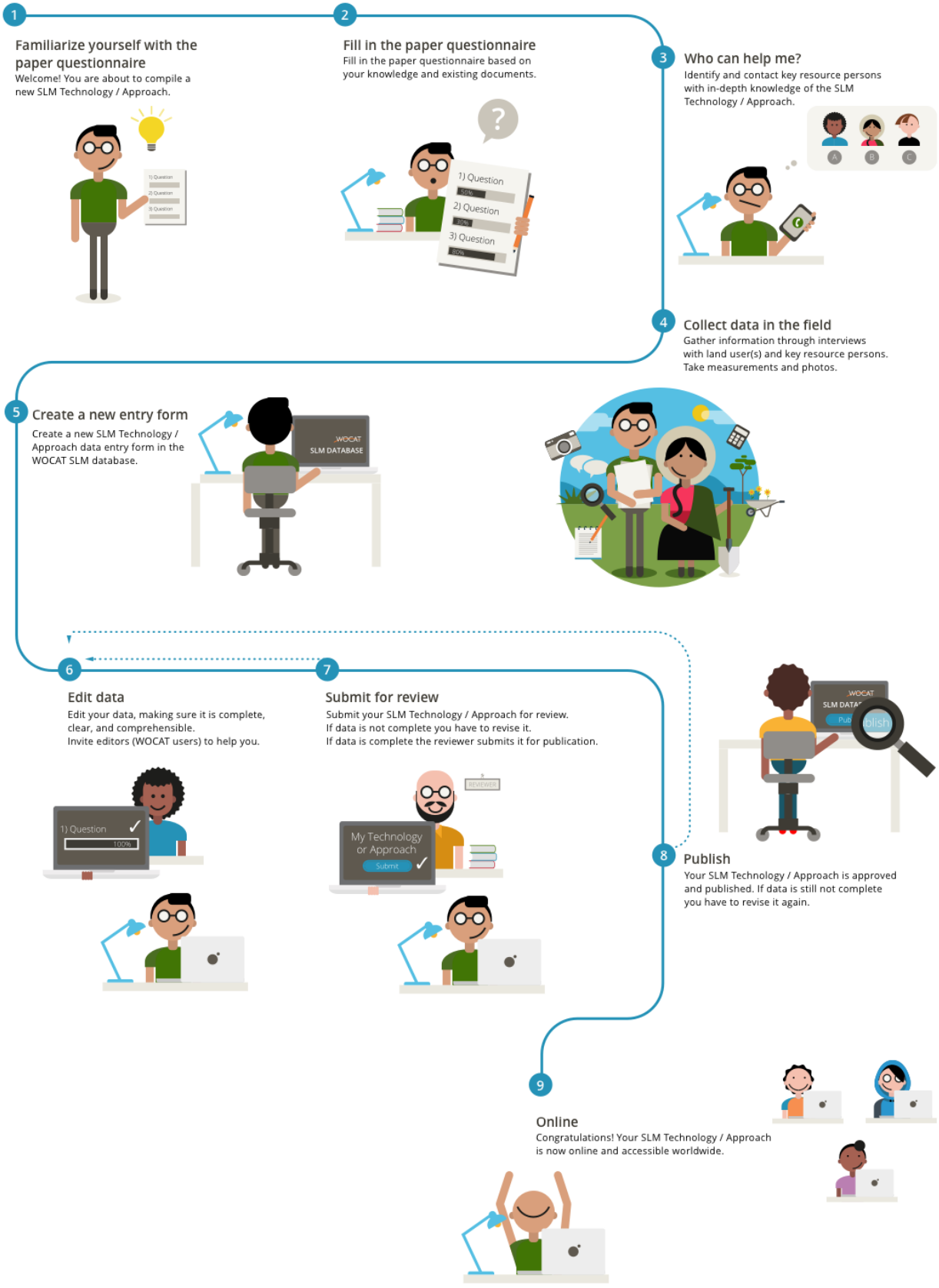
An Approach should always be linked to one or several Technologies. Optional thematic modules provide in-depth information on specific topics (such as Climate Change Adaptation, Watershed and Runoff, and Mapping Land Degradation and Conservation). See https://qcat.wocat.net

How to document and review WOCAT data
1) Familiarize yourself with the paper questionnaire (download it at https://www.wocat.net/en/global-slm-database/slm-practices-technologies-and-approaches). Go through the questions. Read the *instructions, explanations, definitions, and examples (in italics)*. Contact the WOCAT Secretariat if you have questions.
2) Start filling in the questionnaire based on your knowledge and existing documents. Please write clearly and legibly.
3) Identify land users and other key resource persons with in-depth knowledge of the SLM Technology/ Approach (ideally a team of specialists with different backgrounds and experience).
4) Collect data in the field. Gather information through interviews with land user(s) and key resource persons. Take measurements and photos, and make technical drawings.
5) Enter the compiled information in the Global SLM Database. Go to https://qcat.wocat.net and create a new SLM Technology/ Approach data entry form. Type the data collected – section by section, and upload images and other digital files.
6) The Global SLM Database will guide you on how to edit and submit your data for review, making sure it is complete, clear, and comprehensible. You can invite editors (registered WOCAT users) to help you.

Notes:
- ***Answer all questions.*** *If precise data are not available, we ask you to provide a best estimate based on your professional judgement. If certain questions are not applicable or not relevant, indicate "n/a".*
- *Questions with the icon*  *must be answered in consultation with land users. Depending on the Technology, it may be advantageous to answer all questions in consultation with land users.*
- *Questions with the icon*  *require measurements or observations in the field.*
- ○ *Circles indicate a single-select question. Select only one answer.* □ *Tick boxes allow to select several answers.*
- ***Make use of existing documents and seek advice from other SLM specialists and land users as much as possible in order to improve the quality of the data.***
- *Fill in a separate questionnaire for each Technology and for each Approach.*

Help us to improve WOCAT
Thank you for contributing to the Global SLM Database with high-quality data on SLM. WOCAT provides flexible and user-driven tools. Help us to improve the existing questionnaires and contribute to the development of new questionnaire modules on specific topics related to SLM. Send your inputs or feedback to: wocat@cde.unibe.ch

The WOCAT documentation and review process: 9 steps



Answer all questions. *If precise data are not available, we ask you to provide a best estimate based on your professional judgement. If certain questions are not applicable or not relevant, indicate "n/a".*

1. General information

1.1 Name of the SLM Technology (hereafter referred to as the Technology)

Name: .....

Locally used name: .....

Country: .....

1.2 Contact details of resource persons and institutions involved in the assessment and documentation of the Technology

Compiler

The person who conducted the interviews, compiled the information, and filled in the questionnaire.

Last name: ..... First name(s): ..... ○ Ms. ○ Mr.

Name of institution: .....

.....

.....

Country: .....

Phone no. 1: ..... Phone no. 2 (mobile) .....

E-mail 1: ..... E-mail 2: .....

Key resource person(s)

Person(s) who provided most of the information documented in this questionnaire. These can be land users, SLM specialists (e.g. technical advisers, researchers), or any other persons. ***Note****: Circles indicate a single-select question. Tick only one answer!*

Specify the key resource person 1: ○ Land user[1] ○ SLM specialist/ technical adviser ○ Co-compiler:

○ other (specify): …….

Is the key resource person a registered or a non-registered WOCAT user?

○ Registered user ○ Non-registered user

WOCAT recommends that important key resource persons of this dataset be registered in the WOCAT database/ website. That way they remain contactable for inquiries. Their contact data will only be accessible to registered WOCAT users.

Last name: ..... First name(s): ..... ○ Ms. ○ Mr.

Name of institution: .....

Country: .....

[1] ***Land user****: the person/ entity who implements/ maintains the Technology. The term land user may refer to individual small- or large-scale farmers, groups (gender, age, status, interest), cooperatives, industrial companies (e.g. mining), government institutions (e.g. state forest), etc.*

Indicate further resource persons who have provided information on the Technology (if relevant):

Specify the key resource person 2: ○ Land user[1] ○ SLM specialist/ technical adviser ○ Co-compiler:

○ other (specify): ……

Is the key resource person a registered or a non-registered WOCAT user?

○ Registered user ○ Non-registered user

WOCAT recommends that important key resource persons of this dataset be registered in the WOCAT database/ website. That way they remain contactable for inquiries. Their contact data will only be accessible to registered WOCAT users.

Last name: ..... First name(s): ..... ○ Ms. ○ Mr.

Name of institution: .....

Country: .....

Specify the key resource person 3: ○ Land user[1] ○ SLM specialist/ technical adviser ○ Co-compiler:

○ other (specify): ……

Is the key resource person a registered or a non-registered WOCAT user?

○ Registered user ○ Non-registered user

WOCAT recommends that important key resource persons of this dataset be registered in the WOCAT database/ website. That way they remain contactable for inquiries. Their contact data will only be accessible to registered WOCAT users.

Last name: ..... First name(s): ..... ○ Ms. ○ Mr.

Name of institution: .....

Country: .....

Specify the key resource person 4: ○ Land user[1] ○ SLM specialist/ technical adviser ○ Co-compiler:

○ other (specify): ……

Is the key resource person a registered or a non-registered WOCAT user?

○ Registered user ○ Non-registered user

WOCAT recommends that important key resource persons of this dataset be registered in the WOCAT database/ website. That way they remain contactable for inquiries. Their contact data will only be accessible to registered WOCAT users.

Last name: ..... First name(s): ..... ○ Ms. ○ Mr.

Name of institution: .....

Country: .....

Name of the institution(s) that facilitated the documentation/ evaluation of the Technology (if relevant): ..... ……

Name of project that facilitated the documentation/ evaluation of the Technology (if relevant): ……

Note: You may upload the logo(s) of your institution/ project to the WOCAT database.

1.3 Conditions regarding the use of data documented through WOCAT

The compiler and key resource person(s) accept the conditions regarding the use of data documented through WOCAT:
○ Yes ○ No

Note: If you do not accept the conditions regarding the use of data documented through WOCAT, you will not be able to enter and edit data in the WOCAT database.

Conditions regarding the use of data documented through WOCAT

- *Data captured through WOCAT questionnaires will be entered, edited, and stored in the WOCAT online database by the compiler or a data entry person assigned by the compiler. Overall responsibility for compilation and data quality lies with the compiler. The names of the compiler, resource persons, and data entry person will appear next to the data in the database as well as in any compilation or publication of the documented Technology.*
- *Data stored in the WOCAT database are open access.*
- *Data are made available for users under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.*

You are free to:

- ***Share** — copy and redistribute the material in any medium or format*
- ***Adapt** — remix, transform, and build upon the material*

The licensor cannot revoke these freedoms as long as you follow the following license terms:

- ***Attribution** — You must give appropriate credit, provide a link to the license, and indicate if changes were made.*
- ***Non-commercial** — You may not use the material for commercial purposes.*
- ***ShareAlike** — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original.*
- ***No additional restrictions** — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.*

***Full license terms**: http://creativecommons.org/licenses/by-nc-sa/3.0/legalcode*

1.4 Declaration on sustainability of the described Technology

WOCAT questionnaires focus on the documentation and assessment of SLM practices. However, the questionnaires can also be used to describe a non-sustainable land management practice if you wish to compare this practice with specific SLM Technologies and/ or Approaches.

Does the Technology have adverse effects on land degradation, so that it cannot be declared a *sustainable* land management technology?

○ Yes ○ No

Comments: .....

.....

1.5 Reference to Questionnaire(s) on SLM Approaches (documented using WOCAT)

To correctly understand the implementation of the Technology, the associated SLM Approach must be described. Name the corresponding Approach and its compiler below, and make sure that a link is created in the database.

Name of SLM Approach:	Compiler:
.....	.....

2. Description of an SLM Technology

An SLM Technology *is a practice applied in the field that controls land degradation and/ or enhances productivity. This questionnaire was designed to document a single SLM Technology and cannot be used to assess an entire farm.*

An SLM Technology may consist of one or several ***SLM measures*** *(agronomic, vegetative, structural, and management measures); e.g. terraces combined with grass strips and contour ploughing.*

The Technology you are documenting should be specific to a certain context. It should cover a homogeneous set of conditions, both natural (biophysical, i.e. altitudinal zone) and human (socio-economic, i.e. land tenure management).

Site-specific information*: Information provided in this questionnaire should strictly refer to the sites that were assessed/ analysed during the documentation of the Technology (e.g. through interviews with land users, field surveys, etc.), even if the Technology is applied or applicable to a wider area.*

2.1 Short description of the Technology

Summarize the Technology in 1-2 sentences. Make sure this short description is precise and contains relevant keywords. It is the lead text of this documentation and provides an important basis for searching the database.

.....

.....

2.2 Detailed description of the Technology

The detailed description should provide a concise but comprehensive picture of the Technology to outsiders. It should therefore address key questions such as: (1) What are the main characteristics/ elements of the Technology (including technical specifications)? (2) Where is the Technology applied (natural and human environment)? (3) What are the purposes/ functions of the Technology? (4) What major activities/ inputs are needed to establish/ maintain the Technology? (5) What are the benefits/ impacts of the Technology? (6) What do land users like/ dislike about the Technology? The description should ideally be 2,500-3,000 characters in length; the absolute maximum is 3,500 characters. Additional, more detailed descriptions may be uploaded to the database as separate documents. We suggest filling in the description at the beginning, and revising it once you have completed the questionnaire.

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2.3 Photos of the Technology

Provide photos showing an overview and details of the Technology.

Provide at least two digital files (JPG, PNG, GIF), i.e. files from a digital camera or scans from prints, negative films, or slide films. Photos should be of high quality/ high resolution and not manipulated or distorted.
An explanation (description) is required for each photo submitted! Photos should match the description given in 2.2 and help illustrate the technical drawing in 4.1.
Where appropriate, photos should depict the situation before and after or with and without SLM measures.
Good photos are crucial for understanding and illustrating the main features of the Technology.

Filename of photo	Caption, explanation of photo	Date	Location	Name of photographer

General remarks regarding photos: .....
.....

Example

Overview *(left): Fanya juu terraces with grass strips on the risers developed into bench terraces*
Detail *(right): Fanya juu bund in a maize field after harvest: Napier grass on the upper part of the bund, and maize residues in the ditch below. (Photos: Machakos, Kenya; H.P. Liniger)*

2.4 Videos of the Technology

If video files presenting the Technology are available, upload them to a public platform (e.g. vimeo.com, youtube.com) and indicate a link and a short description for each file in the table below. Videos on vimeo.com can be linked directly to the WOCAT database. For videos on youtube.com please insert the URL in the comments section.

Link	Comments, short description	Date	Location	Name of videographer

2.5 Country/ region/ locations where the Technology has been applied and which are covered by this assessment

The described Technology might be applied in various sites. However, restrict information given in this questionnaire to only those sites that have been assessed/ analysed in the documentation process (through field visits, interviews with respective land users, reports, etc.). Do not include other sites where the same Technology is applied but no data have been collected.

Country: ..... Region/ State/ Province: .....

Further specification of location (e.g. municipality, town, etc.), if relevant:: .....

Number of sites considered/ analysed in the documentation of this Technology:

○ single site ○ 2-10 sites ○ 10-100 sites ○ 100-1,000 sites ○ > 1,000 sites

***Site**: A site can be a single plot or a larger area managed by individuals or a community, or a place where specific infrastructure has been implemented (e.g. dam).*

***Note**: Circles indicate a single-select question. Select only one answer!*

Geo-referenced information (coordinates) of the sites where the Technology was documented (reference sites):

Add a point for each site that was considered/ analysed in the documentation of this technology. If more than 10 sites were considered, select and add a point for those that are most representative.
The coordinates must be in decimal degrees of the "Latitude, Longitude" format, e.g. 46.9526, 7.4352
Use the following link to convert from degrees, minutes, and seconds to decimal degrees: http://www.latlong.net

Name of location, name of land user, etc.	Latitude	Longitude

Comments: .....

.....

Specify the spread of the Technology:

○ evenly spread over an area (e.g. mulching, series of terraces, afforestation, micro-catchments)
○ applied at specific points/ concentrated on a small area (e.g. a water harvesting dam in a waterway or a water borehole for water provision)

If the Technology is evenly spread over an area, specify area covered (in km^2): .....

1 ha = 10'000m²; 1 km² = 100 ha

Is/ are the technology site(s) located in a permanently protected area?

○ Yes ○ No

2.6 Date of implementation

Indicate year of implementation: ……

If precise year is not known, indicate approximate date:

○ less than 10 years ago (recent) ○ 10-50 years ago ○ more than 50 years ago (traditional)

2.7 Introduction of the Technology

Several answers possible.

Specify how the Technology was introduced:

☐ as part of a traditional system
☐ through recent land users' innovation
☐ during experiments/ research
☐ through projects/ external interventions
☐ other (specify): ……..

Comments (type of project, etc.) .....
.....
.....
.....

*The terms **traditional** and **innovation** refer to the land users' own technologies. Traditional systems cover technologies that have been in use for generations, recent innovations have been developed more recently by innovative land users in response to changing circumstances. Use "other" when the Technology does not fit any of the given categories and specify why it does not fit.*

3. Classification of the SLM Technology

3.1 Main purpose(s) of the Technology

Several answers possible. Maximal 5 answers possible.

- ☐ improve production (crop, fodder, wood/ fibre, water, energy)
- ☐ prevent (avoid), reduce land degradation; restore/rehabilitate land (reverse land degradation) (soil, water, vegetation)
- ☐ conserve ecosystem
- ☐ preserve/ improve biodiversity
- ☐ create beneficial economic impact (e.g. increase income/ employment opportunities)
- ☐ create beneficial social impact (e.g. reduce conflicts on natural resources, support marginalized groups)
- ☐ reduce risk of disasters (e.g. droughts, floods, landslides)
- ☐ adapt to climate change/ extremes and its impacts (e.g. resilience to droughts, storms)
- ☐ mitigate climate change and its impacts (e.g. through carbon sequestration)
- ☐ other purpose (specify): .....

3.2 Current land use type(s) where the Technology is applied

See definitions of land use, land use types, and subcategories below. Use the definitions given in this document, even if they differ from your own/ national definitions.

Is land use mixed within the same land unit (following ICRAF definitions)?

[1]***Mixed land use****: a mixture of crops, grazing, and trees within the same land unit, e.g. agroforestry, agro-silvopastoralism.*

○ Yes ○ No

If yes, specify **mixed land use in an agroforestry system** (crops/ grazing/ trees):

- ○ Agrosilviculture (e.g. cropland and trees)
- ○ Agrosilvipastoral (crops + pasture/animals + trees).
- ○ Silvipastoral (trees and pasture/animals)

Select land use type ☐ *Usually one, max. 2 answers*	***Select one or more subcategories*** ☐ *Several answers possible*	***Specify species, products, services, etc.*** ○ *Only one tick possible* ☐ *Several answers possible*
☐ Cropland	☐ Annual cropping ☐ Perennial cropping ☐ Tree and shrub cropping ☐ other (specify):	Specify crops: ..... *See Annex* Number of growing seasons per year: ○ 1 ○ 2 ○ 3 Is crop rotation practised? ○ Yes ○ No Is intercropping practised (The mixed cultivation of two or more crops in the same field)? ○ Yes ○ No
☐ Grazing land	***Extensive grazing***	Specify animal type: .....

	☐ Nomadism ☐ Semi-nomadic pastoralism ☐ Transhumant pastoralism ☐ Ranching ***Intensive grazing*** ☐ Cut-and-carry/ zero grazing ☐ Improved pasture ***Other*** ☐ Other (specify): …….	*See Annex* Is integrated crop-livestock management practised (crop and livestock farming combined and complementary)? ◯ Yes, specify: …… ◯ No Specify products and services for grazing land: ..... *See Annex* Animal population Species 1: ..... Count: ..... Species 2: ..... Count: ..... Species 3: ..... Count: ..... Species 3: ..... Count: .....
☐ Forest/ woodlands	☐ ***(Semi-)natural forests/ woodlands*** Specify forest management type: ☐ Selective felling ☐ Clear felling ☐ Shifting cultivation ☐ Removal of deadwood or cuttings ☐ Non-wood forest use Specify natural forest type (if relevant): ..... *See Annex* ☐ ***Tree plantation, afforestation*** Specify origin and composition of species: ☐ Monoculture local variety ☐ Monoculture exotic variety ☐ Mixed varieties Specify plantation forest type (if relevant):	Specify tree type(s): ..... *See Annex* Are the trees specified deciduous or evergreen? ◯ deciduous ◯ mixed deciduous/ evergreen ◯ evergreen Specify products and services: ☐ Timber ☐ Fuelwood ☐ Fruits and nuts ☐ Other forest products (honey, medicinal, etc.) ☐ Grazing/ browsing ☐ Nature conservation/protection ☐ Recreation/ tourism ☐ Protection against natural hazards ☐ other (specify): .....
☐ Settlements, infrastructure	☐ Settlements, buildings ☐ Traffic: roads, railways ☐ Energy: pipelines, power lines ☐ other (specify):	Remarks: ....
☐ Waterways, waterbodies, wetlands	☐ Drainage lines, waterways ☐ Ponds, dams ☐ Swamps, wetlands ..... ☐ Rivers and riparian zone ☐ Lakes and lakeshores ☐ Sea and seashores ☐ other (specify):	Main products/ services: ....

☐ Mines, extractive industries	Specify:	Main products:.....
☐ Unproductive land	Specify:	Remarks: .....
☐ Protected areas	Specify:	Remarks: .....
☐ Other (specify):	Specify:	Remarks: .....

Comments: .....

.....

Choose from the land use types and subcategories listed below.

Land use: *the human activities that are directly related to land, either by making use of its resources or by having an impact on it.*

Land cover: *vegetation (natural or planted) or man-made structures (buildings, etc.) that cover the surface of the soil.*

Land use types

Main categories	***Subcategories***
Cropland: *land used for cultivation of crops (field crops, orchards)*	• ***Ca: Annual cropping:*** *land under temporary/ annual crops usually harvested within one, maximally two years (e.g. maize, paddy rice, wheat, vegetables, fodder crops).* • ***Cp: Perennial (non-woody) cropping:*** *land under permanent (not woody) crops that may be harvested after 2 or more years, or where only part of the plants are harvested (e.g. sugar cane, banana, sisal, pineapple).* • ***Ct: Tree and shrub cropping:*** *permanent woody plants with crops harvested more than once after planting and usually lasting for more than 5 years (e.g. orchard/ fruit trees, coffee, tea, grapevines, oil palm, cacao, coconut, fodder trees). If combined with annual and perennial crops or pastures/ grasslands, then indicate "mixed land use system".* • ***Co:*** *Other*

Grazing land: *land used for animal production*	• ***Ge: Extensive grazing land:*** *grazing on natural or semi-natural grasslands, grasslands with trees/ shrubs (savannah vegetation), or open woodlands for livestock and wildlife. Includes the following subcategories:*
	  • ***Nomadism****: people move with animals.*
	  • ***Semi-nomadic pastoralism****: animal owners have a permanent place of residence where they practice cultivation. Herds are moved to distant grazing grounds.*
	  • ***Ranching****: grazing within well-defined boundaries, movements cover smaller distances and management inputs are higher compared to semi-nomadism.*
	  • ***Transhumant pastoralism****: regular movements of herds between fixed areas in order to benefit from the seasonal variability of climates and pastures.*
	• ***Gi: Intensive grazing/ fodder production:*** *improved or planted pastures for grazing/ production of fodder (for cutting and carrying: hay, leguminous species, silage etc.) not including fodder crops such as maize or cereals. These are classified as annual crops (see above). Intensive grazing can be subclassified into:*
	  • ***Cut-and-carry/ zero grazing****: carrying fodder to animals confined to a stall/ shed or another restricted area; in zero-grazing systems the livestock are not permitted to graze at any time.*
	  • ***Improved pastures****: pasture that is sown with a mixture of introduced grasses and legumes (can be fertilized and/ or inoculated with rhizobia to fix nitrogen).*
	• ***Go:*** *Other*

Forests/ woodlands: *land used mainly for wood production, other forest products, recreation, protection.*	• ***Fn: Natural or semi-natural:*** *forests mainly composed of indigenous trees, not planted by man.*
	  • *Selective felling.*
	  • *Clear felling: felling the whole forest at a time.*
	  • *Shifting cultivation: felling (harvesting) only certain valuable trees within a forest.*
	  • *Removal of deadwood or cuttings (but no cutting of trees).*
	  • *Non-wood forest use (e.g. fruit, nuts, mushrooms, honey, medicinal plants, etc.) .*

	• ***Fp: Plantations, afforestations:*** *forest stands established by planting or/ and seeding in the process of afforestation or reforestation, windbreaks.*
	  • *Monoculture local variety.*
	  • *Monoculture exotic variety.*
	  • *Mixed varieties.*
	• ***Fo: Other:*** *e.g. selective cutting of natural forests and incorporating planted species.*

Settlements, infrastructure	• ***Ss:*** *Settlements, buildings* • ***St:*** *Traffic lines: roads, railways* • ***Se****: Energy lines: pipelines, power lines* • ***So****: Other infrastructure*
Waterways, waterbodies, wetlands	• ***Wd****: Drainage lines, waterways* • ***Wp****: Ponds, dams* • ***Ws****: Swamps, wetlands* • ***Wr****: Rivers and riparian zone* • ***Wl****: Lakes and lakeshore* • ***Wc****: Sea and seashores* • ***Wo****: Other waterways*
Mines, extractive industries	• ***I****: Mines, extractive industries* • ***Io****: Other*
Unproductive land	• ***U****: Wastelands, deserts, glaciers, etc.* • ***Uo*** *: Other*

3.3 Land use before the implementation of the Technology?

Has land use changed due to the implementation of the Technology?

○ No (Skip questions below and continue with question 3.4)

○ Yes (Please fill out the questions below with regard to the land use before implementation of the Technology)

Is land use mixed within the same land unit (e.g. agroforestry)?

[1]***Mixed land use****: a mixture of crops, grazing and trees within the same land unit, e.g. agroforestry, agro-silvopastoralism.*

○ Yes ○ No

If yes, specify **mixed land use** (crops/ grazing/ trees):

○ Agroforestry (e.g. cropland and trees)

○ Agro-pastoralism (e.g. cropland and grazing land, incl. seasonal change between crops and livestock)

○ Agro-silvopastoralism (e.g. cropland, grazing land and trees, incl. seasonal change between crops and livestock)

○ Silvo-pastoralism (e.g. forest and grazing land)

Select land use type ☐ *Usually one, max. 2 answers*	***Select one or more subcategories*** ☐ *Several answers possible*	***Specify species, products, services, etc.*** ○ *Only one tick possible* ☐ *Several answers possible*
☐ Cropland	☐ Annual cropping ☐ Perennial cropping ☐ Tree and shrub cropping ☐ other (specify):	Specify crops: ..... *See (Link to dropdown)* Number of growing seasons per year: ○ 1 ○ 2 ○ 3 Is crop rotation practiced? ○ Yes ○ No Is intercropping practiced?

		○ Yes ○ No
☐ Grazing land	***Extensive grazing*** ☐ Nomadism ☐ Semi-nomadic pastoralism ☐ Ranching ☐ Transhumant pastoralism ***Intensive grazing*** ☐ Cut-and-carry/ zero grazing ☐ Improved pasture ***Other*** ☐ Other (specify): …….	Specify animal type: ..... *See (Link to dropdown)* Is integrated crop-livestock management practiced? ○ Yes, specify: …… ○ No Specify products and services for grazing land: ..... *See (Link to dropdown)* Animal population Species 1: ..... Count: ..... Species 2: ..... Count: ..... Species 3: ..... Count: ..... Species 3: ..... Count: .....
☐ Forest/ woodlands	☐ ***(Semi-)natural forests/ woodlands*** Specify forest management type: ☐ Selective felling ☐ Clear felling ☐ Shifting cultivation ☐ Dead wood/ prunings removal ☐ Non-wood forest use Specify natural forest type (if relevant): ..... *See (Link to dropdown)* ☐ ***Tree plantation, afforestation*** Specify origin and composition of species: ☐ Monoculture local variety ☐ Monoculture exotic variety ☐ Mixed varieties Specify plantation forest type (if relevant):	Specify tree type(s): ..... *See (Link to dropdown)* Are the trees specified deciduous or evergreen? ○ deciduous ○ mixed deciduous/ evergreen ○ evergreen Specify products and services: ☐ Timber ☐ Fuelwood ☐ Fruits and nuts ☐ Other forest products (honey, medicinal, etc.) ☐ Grazing/ browsing ☐ Nature conservation/protection ☐ Recreation/ tourism ☐ Protection against natural hazards ☐ other (specify): .....
☐ Settlements, infrastructure	☐ Settlements, buildings ☐ Traffic: roads, railways ☐ Energy: pipelines, power lines ☐ other (specify):	Remarks: ....
☐ Waterways, waterbodies, wetlands	☐ Drainage lines, waterways ☐ Ponds, dams ☐ Swamps, wetlands ..... ☐ other (specify):	Main products/ services: ....

		.....
☐ Mines, extractive industries	Specify:	Main products:.....
☐ Unproductive land	Specify:	Remarks: .....
☐ Other (specify):	Specify:	Remarks: .....

3.4 Water supply

Water supply for the land on which the Technology is applied:

○ rainfed ○ mixed rainfed–irrigated ○ full irrigation ○ other (e.g. post-flooding): ……

Comment: .....

Rainfed: *crop establishment and development is completely determined by rainfall.*
Mixed rainfed–irrigated: *the application of a limited amount of water to the crop when rainfall fails to provide sufficient water for plant growth, to increase and stabilize yield; the additional water alone is inadequate for crop production.*
Full irrigation: *any of several means of an artificial regular supply of water, in addition to rain, to the crop(s).*
Post-flooding: *after rainwater has naturally flooded the field (e.g. in Wadis, riverbanks), the water infiltrated into the soil is used intentionally as a water reserve for crop cultivation. The crop(s) use(s) this water reserve for establishment.*

3.5 SLM group to which the Technology belongs

Assign the described Technology to one of the following SLM groups. If this is not possible, select several (max. 3) groups to represent the Technology:

☐ natural and semi-natural forest management
☐ forest plantation management
☐ agroforestry
☐ windbreak/ shelterbelt
☐ area closure (stop use, support restoration)
☐ rotational system (crop rotation, fallows, shifting cultivation)
☐ pastoralism and grazing land management
☐ integrated crop–livestock management
☐ improved ground/ vegetation cover
☐ minimal soil disturbance
☐ integrated soil fertility management
☐ cross-slope measure
☐ integrated pest and disease management (incl. organic agriculture)
☐ improved plant varieties/ animal breeds
☐ water harvesting
☐ irrigation management (incl. water supply, drainage)
☐ water diversion and drainage
☐ surface water management (spring, river, lakes, sea, riparian zone, riverbanks, seashore, lakeshore, spring shed)
☐ groundwater management
☐ wetland protection/ management
☐ waste management/ waste water management
☐ energy efficiency
☐ beekeeping, aquaculture, poultry, rabbit farming, silkworm farming, etc.
☐ home gardens
☐ ecosystem-based disaster risk reduction

☐ post-harvest measures
☐ other (specify): .....

Natural and semi-natural forest management*: encompasses administrative, legal, technical, economic, social, and environmental aspects of the conservation and use of forests.*

Forest plantation management*: plantation forests comprise even-aged monocultures and are established primarily for wood and fibre production. They are usually intensively managed and have relatively high growth rates and productivity.*

Agroforestry*: integrates the use of woody perennials with agricultural crops and/ or animals for a variety of benefits and services, including better use of soil and water resources; multiple fuel, fodder, and food products; and habitat for associated species.*

Windbreak*: or shelterbelt is a plantation usually made up of one or more rows of trees or shrubs planted in such a manner as to provide shelter from the wind and to protect soil from erosion. They are commonly planted around the edges of fields on farms.*

Area closure (stop use, support restoration)*: enclosing and protecting an area of degraded land from human use and animal interference, to permit natural rehabilitation, enhanced by additional vegetative and structural conservation measures.*

Rotational systems (crop rotation, fallows, shifting cultivation)*: The successive cultivation of different crops in a specified order on the same fields. letting it fallow for a period of time. Shifting cultivation is an agricultural system in which plots of land are cultivated temporarily, then abandoned and allowed to revert to their natural vegetation while the cultivator moves on to another plot.*

Pastoralism and grazing land management*: is the grazing of animals on natural or semi-natural grassland, grassland with trees, and/ or open woodlands. Animal owners may have a permanent residence while livestock is moved to distant grazing areas, according to the availability of resources.*

Integrated crop–livestock management*: optimizes the uses of crop and livestock resources through interaction and the creation of synergies.*

Improved ground/ vegetation cover*: any measures that aim to improve the ground cover, be it by dead material/ mulch or vegetation.*

Minimal soil disturbance *refers to no-tillage or low soil disturbance only in small strips and/ or shallow depth and direct seeding.*

Integrated soil fertility management *(IFSM) aims at managing soil by combining different methods of soil fertility amendment together with soil and water conservation. ISFM is based on three principles: maximizing the use of organic sources of fertilizer (e.g. manure and compost application, nitrogen-fixing green manure and cover crops); minimizing the loss of nutrients; and judiciously using inorganic fertilizer according to needs and economic availability.*

Cross-slope measures*: are constructed on sloping lands in the form of earth or soil bunds, stone lines, or vegetative strips, etc. for reducing runoff velocity and soil erosion.*

Improved plant varieties/ animal breeds*: refers to the development of new plant varieties or animal breeds that offer benefits such as improved production, resistance to pests and diseases, or drought tolerance, in response to changing environmental conditions and land users' needs.*

Water harvesting*: is the collection and management of floodwater or rainwater runoff to increase water availability for domestic and agricultural use as well as ecosystem sustenance.*

Irrigation management (incl. water supply, drainage) *aims to achieve higher water use efficiency through more efficient water collection and abstraction, water storage, distribution, and water application.*

Water diversion and drainage*: is the natural or artificial diversion or removal of surface and sub-surface water from an area.*

Surface water and adjacent area management (spring, river, lakes, sea)*: involves the protection of springs, rivers, riparian zones, lakes, and lakeshores from pollution, high water flows (floods), or over-abstraction of water, as well as protection measures against damage from waterbodies (e.g. river bank erosion, floods, tidal erosion).*

Groundwater management*: involves securing the recharge of groundwater reserves and their protection from pollution, overexploitation/ overuse, and rising groundwater levels leading to salinization.*

Wetland protection/ management*: managing wetland typically involves manipulating water levels and vegetation in the wetland, and providing an upland buffer.*

Waste management/ waste water management*: is a set of activities that include collection, transport, treatment and disposal of waste, prevention of waste production, and modification and reuse/ recycling of waste.*

Energy efficiency technologies*: reduce the amount of energy required to provide products and services, e.g. for cooking and heating, reducing the demand for fuel (fossil, wood).*

Beekeeping, aquaculture, poultry, rabbit farming, silkworm farming, etc.*: allow food production and agricultural products requiring small surfaces of the land.*

Home gardens *(also called backyard or kitchen gardens): are a traditional multifunctional farming system applied on a small area of land around the family home. They have the potential to supply most of the non-staple foods (including vegetables, fruits, herbs, animals, and fish). They also provide a space for recreation, leisure, and relaxation.*

Ecosystem-based Disaster Risk Reduction*: is the sustainable management, conservation, and restoration of ecosystems with the aim of enabling these ecosystems to provide services that mitigate hazards, reduce vulnerability, and increase livelihood resilience.*

***Integrated pest and disease management (incl. organic agriculture)**: Integrated pest and disease management is a process to solve pest and disease problems while minimizing risks to people and the environment.*

***Post-harvest measures**: encompasses activities to deliver a crop from harvest to consumption with minimum loss, maximum efficiency, and maximum return for all involved – such as drying, storage, cooling, cleaning, sorting, and packing.*

3.6 SLM measures comprising the Technology

Use the SLM measures and subcategories listed below. Several answers possible.

Select SLM measure — Select one or more subcategories/ codes (see definitions below), and fill in the specifications where required

- ☐ agronomic measures .....
- ☐ vegetative measures .....
- ☐ structural measures .....
- ☐ management measures .....
- ☐ other measures — Specify: .....

Specify tillage system (if relevant): ☐ no tillage ☐ reduced tillage (> 30% soil cover) ☐ full tillage (< 30% soil cover)

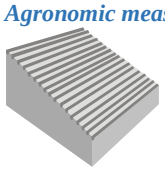
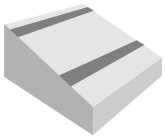
Specify residue management (if relevant): ☐ burned ☐ grazed ☐ collected ☐ retained

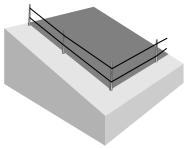
Comments/ remarks: .....

.....

SLM measures – the constituents of a Technology

SLM measures fall into five categories: agronomic, vegetative, structural, management, and other. Measures are components of Technologies. Each Technology is made up of one or – very commonly – a combination of measures: For instance, terraces – a typical structural measure – are often combined with other measures, such as grass on the risers for stabilization and fodder (vegetative measure), or contour ploughing (agronomic measure).

Type of measure	*Subcategories*	*Examples*
Agronomic measures  • *are usually associated with annual crops* • *are repeated routinely each season or in a rotational sequence* • *are of short duration and not permanent* • *do not lead to changes in slope profile* • *are normally independent of slope*	**A1:** Vegetation/ soil cover	*Mixed cropping, intercropping, relay cropping, cover cropping*
	A2: Organic matter/ soil fertility	*Conservation agriculture, production and application of compost/ manure, mulching, trash lines, green manure, crop rotation*
	A3: Soil surface treatment	*Zero tillage (no-till), minimum tillage, contour tillage* *Differentiate tillage systems: No tillage, reduced tillage (>30% soil cover), full tillage (<30% soil cover)*
	A4: Subsurface treatment	*Breaking compacted subsoil (hard pans), deep ripping, double digging*
	A5: Seed management, improved varieties	*Production of seeds and seedlings, seed selection, seed banks, development/ production of improved varieties*
	A6: Residue management	*Specification required: burned, grazed, collected, retained*
	A7: Others	
Vegetative measures  • *involve the use of perennial grasses, shrubs, or trees* • *are of long duration*	**V1:** Tree and shrub cover	*Agroforestry, windbreaks, afforestation, hedges, live fences*
	V2: Grasses and perennial herbaceous plants	*Grass strips along the contour, vegetation strips along riverbanks*
	V3: Clearing of vegetation	*Fire breaks, reduced fuel for forest fires*
	V4: Replacement or removal of alien/ invasive species	*Cutting of undesired trees and bushes*
	V5: Others	*Tree nurseries*

• *often lead to a change in slope profile* • *are often aligned along the contour or against the prevailing wind direction* • *are often spaced according to slope*		
Structural measures  • *are of long duration or permanent* • *often require substantial inputs of labour or money when first installed* • *involve major earth movements and/ or construction with wood, stone, concrete, etc. are often carried out to control runoff, erosion, and wind velocity, and to harvest rainwater* • *often lead to a change in slope profile* • *are often aligned along the contour/ against prevailing wind direction* • *are often spaced according to slope* *If structures are stabilized by means of vegetation, also select relevant vegetative measures!*	**S1:** Terraces **S2**: Bunds, banks **S3:** Graded ditches, channels, waterways **S4:** Level ditches, pits **S5:** Dams, pans, ponds **S6:** Walls, barriers, palisades, fences **S7:** Water harvesting/ supply/ irrigation equipment **S8:** Sanitation/ waste water structures **S9:** Shelters for plants and animals **S10:** Energy saving measures **S11**: Others	*Bench terraces (slope of terrace bed <6%); Forward-sloping terraces (slope of terrace bed >6%* *Earth bunds, stone bunds (along the contour or graded), semi-circular bunds ("demi-lunes")* *Diversion/ drainage ditch, waterways to drain and convey water* *Retention / infiltration ditches, planting holes, micro-catchments* *Dams for flood control, dams for irrigation, sand dams* *Sand dune stabilization, rotational grazing (using fences), area closure, gully plugs (check dams)* *Rooftop water harvesting, water intakes, pipes, tanks, etc.* *Compost toilet, septic tanks, constructed treatment wetlands* *Greenhouses, stables, shelters for plant nurseries* *Wood-saving stoves, insulation of buildings, renewable energy sources (solar, biogas, wind, hydropower)* *Compost production pits; reshaping of surface (slope reduction)*
Management measures  • *involve a fundamental change in land use* • *usually involve no agronomic and structural measures* • *often result in improved vegetative cover* • *often reduce the intensity of use*	**M1:** Change in land use type **M2:** Change in management/ intensity level **M3:** Layout according to natural and human environment **M4:** Major change in timing of activities **M5:** Control/ change in species composition (if annually or in a rotational sequence as done e.g. on cropland → A1) **M6:** Waste management (recycling, re-use or reduce) **M7:** Others	*Area closure/ resting, protection, change from cropland to grazing land, from forest to agroforestry, afforestation* *Change from grazing to cutting (for stall feeding), farm enterprise selection (degree of mechanization, inputs, commercialization), vegetable production in greenhouses, irrigation; from monocropping to rotational cropping; from continuous cropping to managed fallow; from open access to controlled access (grazing land, forests); from herding to fencing, adjusting stocking rates, rotational grazing* *Exclusion of natural waterways and hazardous areas, separation of grazing types, distribution of water points, salt licks, livestock pens, dips (grazing land); increase in landscape diversity, forest aisle* *Land preparation, planting, cutting of vegetation* *Reduction of invasive species, selective clearing, encouragement of desired/ introduction of new species, controlled burning (e.g. prescribed fires in forests/ on grazing land)/ residue burning* *Includes both artificial and natural methods for waste management*
other measures • *comprise any measures that do not fit into the above categories*		*Beekeeping, small stock farming (e.g. poultry, rabbits), fish ponds; food storage and processing (including post-harvest loss reduction)*
Combinations		

• *occur where different measures complement each other and thus enhance each other's effectiveness* • *may comprise any two or more of the above measures*		*Terrace (S1) + Grass strips and trees along riser (V2, V1) + Contour tillage (A3)* *Zero grazing/ stall feeding (M2) + Construction of stables and fence (S10) + Compost/ manure production pits (S12) + Application of manure and compost on cropland (A2)*

3.7 Main types of land degradation addressed by the Technology

***Land degradation**: Degradation of land resources, including soils, water, vegetation, and animals.*

Use the degradation types and subcategories listed below. Several answers possible. Detailed information on the causes of land degradation may be documented using the WOCAT Mapping Tool.

Select degradation type	Select one or more subcategories/ codes (see definitions below), and specify:
☐ soil erosion by water	.....
☐ soil erosion by wind	.....
☐ chemical soil deterioration	.....
☐ physical soil deterioration	.....
☐ biological degradation	.....
☐ water degradation	.....
☐ other	Specify: .....

Comments/ remarks (e.g. human-induced and natural causes of degradation): ……...

……...

Degradation types

W: Soil erosion by water

- *Wt* — *Loss of topsoil/ surface erosion: even removal of topsoil, sheet and interrill erosion*
- *Wg* — *Gully erosion/ gullying: Removal of soil along drainage lines by surface runoff, creating deep channels (more than 30 cm deep)*
- *Wm* — *Mass movements/ landslides: the downward falling or sliding of a mass of earth, debris, or rock on a slope (includes mudflows and rockfalls); also called landslip*
- *Wr* — *Riverbank erosion: the wearing away of the banks of a stream or river*
- *Wc* — *Coastal erosion: loss or displacement of land along the coastline due to the action of waves, currents, or tides, leading to landward retreat of the shoreline*
- *Wo* — *Offsite degradation effects: deposition of sediments, downstream flooding, siltation of reservoirs and waterways, and pollution of water bodies with eroded sediments*

E: Soil erosion by wind

- *Et* — *Loss of topsoil: uniform displacement*
- *Ed* — *Deflation and deposition: uneven removal of soil material*
- *Eo* — *Offsite degradation effects: covering of the terrain with windborne sand particles from distant sources ("overblowing")*

C: Chemical soil deterioration

- *Cn* — *Fertility decline and reduced soil organic matter content (not caused by erosion): e.g. leaching, soil fertility mining, nutrient oxidation, and volatilization (N)*
- *Ca* — *Acidification: lowering of the soil pH*
- *Cp* — *Soil pollution: contamination of the soil with toxic materials*
- *Cs* — *Salinization/ alkalinization: a net increase in salt content of the (top)soil, leading to productivity decline*

P: Physical soil deterioration

- *Pc* — *Compaction: deterioration of soil structure by trampling or through weight and/ or frequent use of machinery*
- *Pk* — *Slaking and crusting: clogging of pores with fine soil material and development of a thin impervious layer at the soil surface obstructing the infiltration of rainwater*

Pi *Soil sealing: covering of the ground by an impermeable material (e.g. construction, mining, roads, etc.)*
Pw *Waterlogging: effects of human-induced water saturation of soils (excluding paddy fields)*
Ps *Subsidence of organic soils, settling of soil: downward motion of soil surface, e.g. due to drainage of organic soils*
Pu *Loss of bio-productive function due to other activities*

B: Biological degradation

Bc *Reduction of vegetation cover: increase of bare/ unprotected soil*
Bh *Loss of habitats: decreasing vegetation diversity (fallow land, mixed systems, field borders), increased fragmentation of habitats*
Bq *Quantity/ biomass decline: reduced vegetative production for different land use*
Bf *Detrimental effects of fires (includes low/ high severity of fires): on forest (e.g. slash and burn), bushland, grazing land, and cropland (burning of residues)*
Bs *Quality and species composition/ diversity decline: loss of natural species, land races, palatable perennial grasses; spreading of invasive, salt-tolerant, unpalatable, species/ weeds*
Bl *Loss of soil life: decline of soil macro-organisms and micro-organisms in quantity and quality*
Bp *Increase in pests/ diseases, loss of predators: reduction in biological control*

H: Water degradation

Ha *Aridification: decrease in average soil moisture content*
Hs *Change in quantity of surface water: change in flow regime (flood, peak flow, low flow, drying up of rivers and lakes)*
Hg *Change in groundwater/ aquifer level: reduction in groundwater table due to over-exploitation or lower recharge of groundwater; or increase in groundwater table resulting in waterlogging and/ or salinization*
Hp *Decline in surface water quality: increased sediments and pollutants in freshwater bodies due to point pollution and land-based pollution*
Hq *Decline in groundwater quality: due to pollutants infiltrating into the aquifers*
Hw *Reduction in the buffering capacity of wetland areas to cope with flooding and pollution*

3.8 Prevention, reduction, or restoration of land degradation

Specify the goal of the Technology with regard to land degradation:
Tick no more than two answers. If you tick "not applicable", please tick no other answer.

☐ to prevent/ avoid land degradation
☐ to reduce land degradation
☐ to restore/ rehabilitate severely degraded land / reverse land degradation
☐ to adapt to land degradation
☐ not applicable

Comments/ remarks: .....

.....

Explanation of terms used above

Prevent (avoid)*: the use of good land management practices on land that may be prone to land degradation. They maintain natural resources and their environmental and productive functions.*
Reduce*: interventions intended to reduce ongoing degradation and/ or halt further degradation. They start improving natural resources and their functions. Impacts tend to be noticeable in the short to medium term.*
Rehabilitate/ restore land / reverse degraded land*: required when the land is already degraded to such an extent that the original use is no longer possible, and land has become practically unproductive. Here, longer-term and more costly investments are needed to show any impact.*
Adapt*: applied when rehabilitation/ restoration of the original state of the land is no longer possible or requires resources beyond the means of land users. This means the state of land degradation is "accepted", but land management is adapted to suit the degradation (e.g. adapting to soil salinity by introducing salt-tolerant plants).*

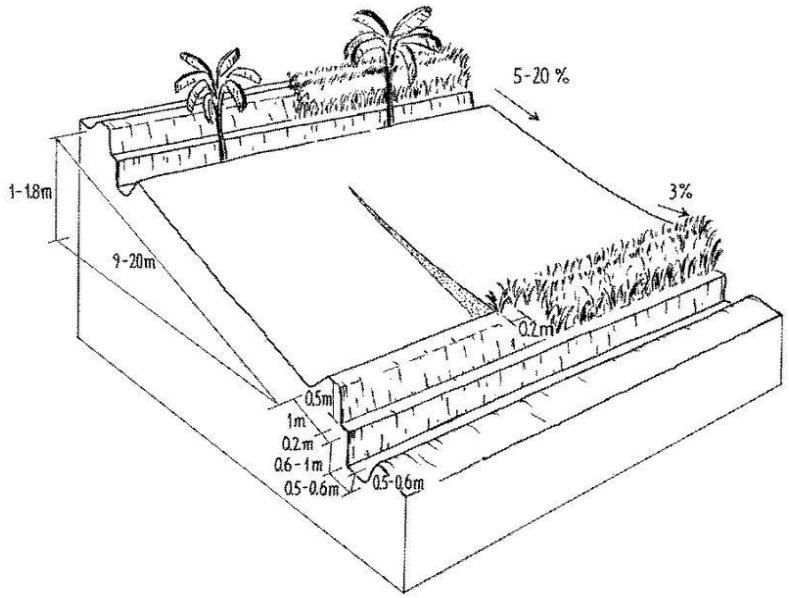
4. Technical specifications, implementation activities, inputs, and costs

4.1 Technical drawing of the Technology

Please provide a comprehensive and detailed drawing (including dimensions) of the Technology and indicate technical specifications, measurements, spacing, gradient, etc. You can also provide several drawings showing (a) a temporal sequence of operations or (b) different elements or details of the Technology. Alternatively, you can provide one or several photographs with technical specifications drawn and/ or written onto the photograph(s). Include as much technical information as possible on the drawings or photographs.
Keep the drawing simple and schematic. The technical drawing is crucial for understanding the Technology! Scan the drawing and upload the scan.

- *Supported file types: PDF, JPG, PNG, maximum file size: 3 MB.*
- *Technical drawings should not be extreme landscape or portrait formats. Square format is ideal.*
- *The first three uploaded technical drawings will appear in the summary*
- *Technical drawings should contain only symbols and/or numbers, but no text. Any text accompanying the drawing should be entered into the next field, where it can be translated into other languages.*

Author: ..... Date: .



***Example**: Technical drawing indicating technical specifications, dimensions, spacing*

Summarize technical specifications, e.g.

- *Dimensions (height, depth, width, length) of structures or vegetative elements*
- *Spacing between structures or plants/ vegetative measures*
- *Vertical intervals structures or vegetative measures*
- *Slope angle (before and after implementation of the Technology)*
- *Lateral gradient of structures*
- *Capacity of dams, ponds, etc.*
- *Catchment area and beneficial area of dams, ponds, other water harvesting systems*
- *Construction material used*
- *Species used*
- *Quantity/ density of plants (per ha)*

.....

.....

.....

.....

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.....

4.2 General information regarding the calculation of inputs and costs

Notes on implementation, inputs, and costs:

- *It may be difficult to determine the costs of a Technology. Nevertheless, we ask you to give your best estimate!*
- *Please distinguish between initial establishment/ initial investment (e.g. construction, initiation, animals) and maintenance/ recurrent annual activities.*
- *All costs should be calculated based on market prices. If labour is provided by land users themselves, indicate the equivalent cost of hired labour. If inputs are provided/ produced by land users themselves, indicate the equivalent market price.*
- *Exclude costs of awareness creation, planning, training, research, and financial/ material support (these will be addressed in the Approach questionnaire).*
- *If the objective is to compare two situations, i.e. the situation after/ with SLM measures (e.g. conservation agriculture) and the situation before/ without SLM measures (e.g. conventional agriculture), fill in two questionnaires.*
- *Preferably, activities, inputs, and costs should be calculated per area on which the Technology is applied. If you use a local area unit, indicate conversion factor between local unit and hectares. Include not only the area that is immediately covered by SLM measures (e.g. the area covered by stone walls, tree lines, ditches) but also the area that is affected/ protected by the SLM measures (e.g. the area between stone walls, tree lines, ditches).*
- *Alternatively, if it is not possible to calculate activities, inputs, and costs per area, they may be calculated per unit (e.g. a dam, an animal watering point, an energy saving stove) or per length (e.g. 10 metres of stone line)*

Specify how costs and inputs were calculated

○ per Technology area → indicate size and area unit: …… (e.g. 24 acres, 4.5 hectares)
If using a local area unit, indicate conversion factor: 1 hectare =…… (e.g. 1 hectare = 2.47 acres)

Refer to area specified in 2.5. For conversions between local and metric units we recommend using an online unit converter, e.g. http://unitconverters.net/

***Technology area**: e.g. area of terraced cropland, area closed for natural regeneration, area used for rotational grazing, etc*

○ per Technology unit: → specify unit: …….. (e.g. watering point, energy saving stove, stone line)
specify dimensions of unit (if relevant): …….. (e.g. stone lines: 250 m, dam: 20,000 m^3)

***Technology unit**: e.g. watering point, energy saving stove, stone line*

Specify currency used for cost calculations: ○ US Dollars ○ other/ national currency (specify): .....

You can use US Dollars (USD) or any other national currency. Indicate all costs using the same currency. If possible, use three-letter ISO currency codes.

Indicate exchange rate from USD to local currency (if relevant): 1 USD =.....

Indicate average wage cost of hired labour per day: …….

4.3 Establishment activities

List establishment activities for the Technology (in sequence) and indicate timing

Activity	***Timing***[1]
1.	.....
2.	.....
3.	.....
4.	.....
5.	.....
6.	.....
7.	.....
8.	.....
9.	.....
10.	.....

[1] ***Timing:*** *time during which activity is carried out, e.g. month or season, or "after harvest of crops", "before onset of rains", etc.*

Comments: .....

4.4 Costs of inputs needed for establishment

Note: *Costs and inputs specified below should refer to the Technology area/ Technology unit defined in 4.2 and to the activities listed in 4.3. Use the currency indicated in 4.2. Figures reflect the situation at the time of recording the data.*

If possible, break down the costs of establishment according to the following table, specifying inputs and costs per input.

Input	Specify input[2]	Unit[3]	Quantity	Costs per unit (specified currency)	Total costs per input (specified currency)	% of costs borne (covered) by land users[4]
Labour						
Equipment						
Plant material						
Fertilizers and biocides						
Construction material						
Others						

Total cost of establishing the Technology (specified currency)	
Total cost of establishing the Technology in USD	

[2] ***Specify inputs:***
- ***Labour*** *includes total person-days, be they paid or unpaid (e.g. contributed by non-hired family members). Under "Costs per unit", indicate daily wage for hired labour. If relevant, differentiate between skilled and unskilled labour.*
- ***Equipment*** *includes tools, machine hours, animal traction, etc. Cost calculation for machine hours and animal traction should be based on hiring costs – even if the machinery/ animals are owned by the land user.*
- ***Plant material*** *includes seeds, seedlings, cuttings, etc.*
- ***Fertilizers and biocides****: compost/ manure, inorganic fertilizer, herbicides, pesticides, etc.*
- ***Construction material*** *includes timber, stones, earth, cement, pipes, tanks, etc.*

[3] ***Unit:*** *person-days, kg, litres, pieces, lump sum, etc.*

[4] ***Costs borne by land users:*** *The percentage of costs that land users contribute. Specify for each input. E.g. if they receive fertilizers for free from a supporting agency, indicate Fertilizer = 0%. If land user provide all labour force, without receiving any reward or subsidies, indicate Labour = 100%. For inputs that are fully paid or provided by external entities, always enter 0%.*

If you are unable to break down the costs, give an estimate of the total costs of establishing the Technology: .....

If land users bore (covered) less than 100% of the costs, indicate who covered the remaining costs: .....

Comments: .....

.....

4.5 Maintenance/ recurrent activities

List maintenance/ recurrent activities for the Technology (in sequence) and indicate timing

Activity	***Timing[1]/ Frequency[2]***
1.	.....
2.	.....
3.	.....
4.	.....
5.	.....
6.	.....
7.	.....
8.	.....
9.	.....
10.	.....

[1] ***Timing:*** *time during which activity is carried out, e.g. month or season, or "after harvest of crops", "before onset of rains", etc.*
[2] ***Frequency:*** *e.g. annually, each cropping season, etc.*

Comments: .....

4.6 Costs of inputs and recurrent activities needed for maintenance (per year)

__Note:__ Costs and inputs specified below should refer to the Technology area/ Technology unit defined in 4.2 and to the activities listed in 4.5. Use the currency indicated in 4.2.

If possible, break down the costs of maintenance according to the following table, specifying inputs and costs per input.

Input	Specify input[3]	Unit[4]	Quantity	Costs per Unit (specified currency)	Total costs per input (specified currency)	% of costs borne (covered) by land users[5]
Labour						
Equipment						
Plant material						
Fertilizers and biocides						
Construction material						
Others						
Total cost of maintaining the Technology (specified currency)						
Total cost of maintaining the Technology in USD						

[3] ***Specify inputs:***
- ***Labour*** *includes total person-days, be they paid or unpaid (e.g. contributed by non-hired family members). Under "Costs per unit", indicate daily wage for hired labour. If relevant, differentiate between skilled and unskilled labour.*
- ***Equipment*** *includes tools, machine hours, animal traction, etc. Cost calculation for machine hours and animal traction should be based on hiring costs – even if the machinery/ animals are owned by the land user.*
- ***Plant material*** *includes seeds, seedlings, cuttings, etc.*
- ***Fertilizers and biocides*** *includes compost/ manure, inorganic fertilizer, herbicides, pesticides, etc.*
- ***Construction material*** *includes timber, stones, earth, cement, pipes, tanks, etc.*

[4] ***Unit:*** *person-days, kg, litres, pieces, lump sum etc.*

[5] ***Costs borne by land users:*** *The percentage of costs that land users contribute. Specify for each input. E.g. if they receive fertilizers for free from a supporting agency, indicate Fertilizer = 0%. If land users provide the entire labour force, without receiving any reward or subsidies, indicate Labour = 100%. For inputs that are fully paid or provided by external entities, always enter 0%.*

If you are unable to break down the costs, give an estimate of the total costs of maintaining the Technology: .....

If land users bore (covered) less than 100% of costs, indicate who covered the remaining costs: .....

Remarks/ comments: .....

.....

4.7 Most important factors affecting costs

.....

.....

5. Natural and human environment

Give details of the natural (biophysical) conditions where the Technology is applied. Make specific reference to the sites where the documented Technology has been assessed and analysed. Tick one box per question only, except for slope and soil parameters (see indications below). Use comment sections to specify your answers and provide additional information.
***Note**: Some of the environmental conditions (e.g. slope angle, soil characteristics, water quality/ availability, etc.) may change as a result of the Technology. However, you are requested to **describe the conditions as they were without any impact of sustainable land management.** In exceptional cases, certain questions might not be relevant for the Technology. In such cases, skip the question but use the comment sections to explain why you are skipping it.*
Use the definitions given in this document, even if they deviate from your own/ national definitions (e.g. slope, soil depth, etc.)

5.1 Climate

Tick no more than two answers per question.

Annual rainfall

- ☐ < 250 mm
- ☐ 251-500 mm
- ☐ 501-750 mm
- ☐ 751-1,000 mm
- ☐ 1,001-1,500 mm
- ☐ 1,501-2,000 mm
- ☐ 2,001-3,000 mm
- ☐ 3,001-4,000 mm
- ☐ > 4,000 mm

Specify average annual rainfall (if known): …….. mm

Specifications/ comments on rainfall distribution, seasonality (e.g. monsoon, winter/ summer rains), number/ length/ months of rainy seasons, occurrence of heavy rains, length of dry periods: .....

.....

.....

.....

.....

Indicate the name of the reference meteorological station considered: .....

.....

[1]Agro-climatic zone

- ☐ humid
- ☐ sub-humid
- ☐ semi-arid
- ☐ arid

Specifications/ comments on climate (e.g. mean annual temperature): .....

.....

.....

.....

[1]Agro-climatic zone

- *Humid: length of growing period (LGP) > 270 days*
- *Sub-humid: LGP 180-269 days*
- *Semi-arid: LGP 75-179 days*
- *Arid: LGP < 74 days*

Length of growing period (LGP) is defined as the period during which precipitation is more than half the potential evapotranspiration (PET) and the temperature is higher than 6.5° C.

5.2 Topography

Tick no more than two answers per question.

Slopes on average[1]

- ☐ flat (0-2%)
- ☐ gentle (3-5%)
- ☐ moderate (6-10%)
- ☐ rolling (11-15%)

Landforms[2]

- ☐ plateau/ plains
- ☐ ridges
- ☐ mountain slopes
- ☐ hill slopes

Altitudinal zone

- ☐ < 100 m a.s.l.
- ☐ 101-500 m a.s.l.
- ☐ 501-1,000 m a.s.l.
- ☐ 1,001-1,500 m a.s.l.

☐ hilly (16-30%)
☐ steep (31-60%)
☐ very steep (> 60%)

☐ footslopes
☐ valley floors

☐ 1,501-2,000 m a.s.l.
☐ 2,001-2,500 m a.s.l.
☐ 2,501-3,000 m a.s.l.
☐ 3,001-4,000 m a.s.l.
☐ > 4,000 m a.s.l.

[1]Slope gradient conversion table:

Slope in degrees	→ Slope in percent
1°	→ 2%
3°	→ 5%
5°	→ 8%
9°	→ 16%
17°	→ 30%
31°	→ 60%
45°	→ 100%

***[2]Landforms** (modified from ISRIC 1993):*

- ***Plateau/ plains:** extended level land (slopes less than 8%).*
- ***Ridges:** narrow elongated area rising above the surrounding area, often hilltops or mountaintops.*
- ***Mountain slopes** (including major escarpments): extended area with altitude differences of more than 600 m per 2 km and slopes greater than 15%*
- ***Hill slopes** (including valley and minor escarpment slopes): altitude difference of less than 600 m per 2 km and slopes greater than 8%*
- ***Footslopes:** zone bordering steeper mountain/ hill slopes on one side and valley floors/ plains/ plateaus on the other side*
- ***Valley floors:** elongated strips of level land (less than 8% slope), flanked by sloping or steep land on both sides*

Indicate if the Technology is specifically applied in
○ convex situations[1]
○ concave situations[2]
○ not relevant

***[1]Convex:** ridge (diversion of water flow)*
***[2]Concave:** depression (conversion of water flow)*

Comments and further specifications on topography (e.g. exact altitude and slope angles of the evaluated sites): .....
.....
.....

5.3 Soils

The following parameters are based on FAO standards. Tick no more than two answers per question.

Soil depth on average[1]

☐ very shallow (0-20 cm)
☐ shallow (21-50 cm)
☐ moderately deep (51-80 cm)
☐ deep (81-120 cm)
☐ very deep (> 120 cm)

Soil texture (topsoil)

☐ coarse/ light (sandy)
☐ medium (loamy, silty)
☐ fine/ heavy (clay)

Soil texture (> 20 cm below surface)

☐ coarse/ light (sandy)
☐ medium (loamy, silty)
☐ fine/ heavy (clay)

Topsoil organic matter

☐ high (> 3%)
☐ medium (1-3%)
☐ low (< 1%)

If available, attach full soil description or specify the available information, e.g. soil type, soil PH/ acidity, Cation Exchange Capacity, nitrogen, salinity etc.: .....
.....

***[1]Soil depth on average:** Distance from top to parent material.*

5.4 Water availability and quality

One answer per question.

Groundwater table

- ○ on surface
- ○ < 5 m
- ○ 5-50 m
- ○ > 50 m

Availability of surface water

- ○ excess (e.g. frequent waterlogging, high runoff)
- ○ good (e.g. available year-round)
- ○ medium (e.g. not available year-round)
- ○ poor/ none

Water quality (untreated)

- ○ good drinking water
- ○ poor drinking water (treatment required)
- ○ for agricultural use only (irrigation)
- ○ unusable

Water quality refers to: ○ ground water ○ surface water ○ both ground and surface water

Is water salinity a problem? ○ Yes ○ No Specify: ……....

Does flooding of the area occur? ○ Yes ○ No **If yes**: frequently ○ episodically ○

Comments and further specifications on water quality and quantity (e.g. seasonal fluctuations, source of pollution) .....

.....

5.5 Biodiversity

Indicate the state of biodiversity in the analysed sites relative to your region/ country standards. One answer per question.

Species diversity[1]

- ○ high
- ○ medium
- ○ low

Habitat diversity[2]

- ○ high
- ○ medium
- ○ low

Comments and further specifications on biodiversity: .....

.....

*[1]**Species diversity**: a measure of diversity within an ecological community that incorporates both species richness (the number of species in a community) and the evenness of species' abundance; species include all fauna and flora above ground and in the soil (modified from eoearth.org)*

*[2]**Habitat diversity**: refers to the variety or range of habitats in a given region, landscape, or ecosystem (modified from oecd.org)*

5.6 Characteristics of land users applying the Technology

Specify the characteristics of the average/ typical land users who apply the Technology. Indicate characteristics relative to your region/ country standards. Tick no more than two answers per question.

Sedentary or nomadic

- ☐ sedentary
- ☐ semi-nomadic
- ☐ nomadic
- ☐ other (specify): ……..

Market orientation of production system

- ☐ subsistence (self-supply)
- ☐ mixed (subsistence/ commercial)
- ☐ commercial/ market

Off-farm income[1]

- ☐ less than 10% of all income
- ☐ 10-50% of all income
- ☐ > 50% of all income

Relative level of wealth[2]

- ☐ very poor
- ☐ poor
- ☐ average
- ☐ rich
- ☐ very rich

Individuals or groups[3]

- ☐ individual/ household
- ☐ groups/ community
- ☐ cooperative
- ☐ employee (company, government)

Level of mechanization

- ☐ manual work
- ☐ animal traction
- ☐ mechanized/ motorized

Gender[4]

- ☐ women
- ☐ men

Age of land users

- ☐ children
- ☐ youth
- ☐ middle-aged
- ☐ elderly

[1] ***Off-farm income**: Income other than from the use of cropland, grazing land, forest, and mixed land (e.g. from business, trade, manufacturing, industry, pension, remittances).*

[2] ***Relative level of wealth**: Use local instead of international standards.*

[3] ***Individuals or groups**: Indicate if land users apply the technology as individuals or as members of a specific group/ company.*

[4]***Gender**: Indicate gender of persons using the land.*

Indicate other relevant characteristics of the land users (e.g. migration, population density, etc.): .....

.....

5.7 Average area of land owned, leased or used (with user rights) by land users applying the Technology

Indicate the total area owned or leased by land users, including land on which no Technology is applied. Tick no more than two answers per question.

- ☐ < 0.5 ha
- ☐ 0.5-1 ha
- ☐ 1-2 ha
- ☐ 2-5 ha
- ☐ 5-15 ha
- ☐ 15-50 ha
- ☐ 50-100 ha
- ☐ 100-500 ha
- ☐ 500-1,000 ha
- ☐ 1,000-10,000 ha
- ☐ > 10,000 ha

Is this considered small-, medium- or large-scale (referring to local context)?

☐ small-scale ☐ medium-scale ☐ large-scale

Comments: .....
.....
.....

5.8 Land ownership, land use rights, and water use rights

Tick no more than two answers per question.

Land ownership	***Land use rights[2]***	***Water use rights[2]** (if relevant)*
☐ state	☐ open access (unorganized)	☐ open access (unorganized)
☐ company	☐ communal (organized)	☐ communal (organized)
☐ communal/ village	☐ leased	☐ leased
☐ group	☐ individual	☐ individual
☐ individual, not titled	☐ other (specify):	☐ other (specify): .....
☐ individual, titled		
☐ other (specify):		

Are land use rights based on a traditional legal system?

○ Yes, please specify: ……..
○ No, please specify: ……

Comments: .....
.....

[1]***Land ownership** refers to the type of entity possessing the land, whereas **land use rights** refer to the type of entity with a right to access the land*

[2]***Land use rights/ water use rights:***

- ***Open access**: means free for all*
- ***Communal (organized)**: means subject to community-agreed management rules*
- ***Leased**: right to use land for a limited period of time against payment (contract)*

- ***Individual**: right of use pertains to single user*

5.9 Access to services and infrastructure

Several answers possible.	poor	moderate	good
health	☐	☐	☐
education	☐	☐	☐
technical assistance	☐	☐	☐
employment (e.g. off-farm)	☐	☐	☐
markets	☐	☐	☐
energy	☐	☐	☐
roads and transport	☐	☐	☐
drinking water and sanitation	☐	☐	☐
financial services	☐	☐	☐
other (specify): ……..	☐	☐	☐

Comments:
……..……..……
……..……..……..……
…..……..……

6. Impacts and concluding statements

Assess relevant impacts in the table below. If data based on measurements are not available, give your best estimate. Negligible means "no significant benefit nor disadvantage". Make use of the "Quantify before SLM/ after SLM" and "Comments/ specify" columns to show evidence and justify your selection as far as possible. Choose adequate indicators to quantify impacts (e.g. t/ha for crop production, coliform measurement for water quality, etc.). Even if a 10% increase (e.g. in yield) might be judged as a great improvement, please nonetheless tick the category "Slightly positive (+5-20%)", and use "Comments" to explain. Only indicate "Quantify (before/ after)" if impacts were measured in the field or determined by means of a survey. Impacts that are not ticked are considered "not relevant" or "not applicable".

***On-site:** the area to which the Technology is applied.*
***Off-site:** areas that are adjacent to or further away the on-site area.*

6.1 On-site impacts the Technology has shown

First, tick relevant impacts (tick boxes on the left, several answers possible). Then, for each selected impact, tick the extent and specify/ quantify if possible.		**Very negative (– 50-100%)**	**Negative (– 20-50%)**	**Slightly negative (– 5-20%)**	**Negligible impact**	**Slightly positive (+5-20%)**	**Positive (+20-50%)**	**Very positive (+50-100%)**		**If possible, quantify before SLM**	**after SLM**	**Comments/ specify**
Socio-economic impacts												
Production												
☐ crop production	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ crop quality	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ fodder production	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ fodder quality	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ animal production	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ wood production	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ forest/ woodland quality	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ non-wood forest production	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ risk of production failure	increased	☐	☐	☐	☐	☐	☐	☐	decreased	.....	.....	.....
☐ product diversity	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ production area (land under cultivation/ use)	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ land management:	hindered	☐	☐	☐	☐	☐	☐	☐	simplified	.....	.....	.....
☐ energy generation (e.g. hydro, biogas)	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
Water availability and quality												
☐ drinking water availability	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ drinking water quality	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ water availability for livestock	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ water quality for livestock	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ irrigation water availability	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ irrigation water quality	decreased	☐	☐	☐	☐	☐	☐	☐	increased	.....	.....	.....
☐ demand for irrigation water	increased	☐	☐	☐	☐	☐	☐	☐	decreased	.....	.....	.....
Income and costs												
☐ expenses on agricultural inputs	incr.	☐	☐	☐	☐	☐	☐	☐	reduced	.....	.....	.....

☐ farm income	decreased	☐☐☐☐☐☐☐	increased	.....	.....	.....
☐ diversity of income sources	decreased	☐☐☐☐☐☐☐	increased	.....	.....	.....
☐ economic disparities	increased	☐☐☐☐☐☐☐	decreased	.....	.....	.....
☐ workload	increased	☐☐☐☐☐☐☐	decreased	.....	.....	.....
Other socio-economic impacts						
☐ (specify):	……..	☐☐☐☐☐☐☐	.....	.....	.....	.....
☐ (specify):	……..	☐☐☐☐☐☐☐	.....	.....	.....	.....
☐ (specify):	……..	☐☐☐☐☐☐☐	.....	.....	.....	.....
				If possible, quantify		**Comments/ specify**
				before SLM	**after SLM**	
Sociocultural impacts						
☐ food security/ self-sufficiency	reduced	☐☐☐☐☐☐☐	improved	.....	.....	.....
☐ health situation	worsened	☐☐☐☐☐☐☐	improved	.....	.....	.....
☐ land use/ water rights	worsened	☐☐☐☐☐☐☐	improved	.....	.....	.....
☐ cultural opportunities (spiritual, religious, aesthetic etc.)	reduced	☐☐☐☐☐☐☐	improved	.....	.....	.....
☐ recreational opportunities	reduced	☐☐☐☐☐☐☐	improved	.....	.....	.....
☐ community institutions	weakened	☐☐☐☐☐☐☐	strengthened	.....	.....	.....
☐ national institutions	weakened	☐☐☐☐☐☐☐	strengthened	.....	.....	.....
☐ SLM/ land degradation knowledge	reduced	☐☐☐☐☐☐☐	improved	.....	.....	.....
☐ conflict mitigation	worsened	☐☐☐☐☐☐☐	improved	.....	.....	.....
☐ situation of socially and economically disadvantaged groups (gender, age, status, ethnicity etc.)	worsened	☐☐☐☐☐☐☐	improved	.....	.....	.....
Other sociocultural impacts						
☐ (specify):	.....	☐☐☐☐☐☐☐	.....	.....	.....	.....
☐ (specify):	.....	☐☐☐☐☐☐☐	.....	.....	.....	.....
☐ (specify):	.....	☐☐☐☐☐☐☐	.....	.....	.....	.....
				If possible, quantify		**Comments/ specify**
				before SLM	**after SLM**	
Ecological impacts						
Water cycle/ runoff						
☐ water quantity	decreased	☐☐☐☐☐☐☐	increased	.....	.....	.....
☐ water quality	decreased	☐☐☐☐☐☐☐	increased	.....	.....	.....
☐ harvesting/ collection of water (runoff, dew, snow, etc.)	reduced	☐☐☐☐☐☐☐	improved	.....	.....	.....
☐ surface runoff	increased	☐☐☐☐☐☐☐	decreased	.....	.....	.....
☐ water drainage	reduced	☐☐☐☐☐☐☐	improved	.....	.....	.....
☐ groundwater table/ aquifer	lowered	☐☐☐☐☐☐☐	recharge	.....	.....	.....
☐ evaporation	increased	☐☐☐☐☐☐☐	decreased	.....	.....	.....
Soil						
☐ soil moisture	decreased	☐☐☐☐☐☐☐	increased	.....	.....	.....
☐ soil cover	reduced	☐☐☐☐☐☐☐	improved	.....	.....	.....

☐ soil loss	increased	☐☐☐☐☐☐☐	decreased	....	.....
☐ soil accumulation	decreased	☐☐☐☐☐☐☐	increased	....	.....
☐ soil crusting/ sealing	increased	☐☐☐☐☐☐☐	reduced	....	.....
☐ soil compaction	increased	☐☐☐☐☐☐☐	reduced	....	.....
☐ nutrient cycling/ recharge	decreased	☐☐☐☐☐☐☐	increased	....	.....
☐ salinity	increased	☐☐☐☐☐☐☐	reduced	....	.....
☐ soil organic matter/ below-ground C	decreased	☐☐☐☐☐☐☐	increased	....	.....
☐ acidity	increased	☐☐☐☐☐☐☐	reduced	....	.....
Biodiversity: vegetation, animals					
☐ vegetation cover	decreased	☐☐☐☐☐☐☐	increased	....	.....
☐ biomass/ above-ground C	decreased	☐☐☐☐☐☐☐	increased	....	.....
☐ plant diversity	decreased	☐☐☐☐☐☐☐	increased	....	.....
☐ invasive alien species	increased	☐☐☐☐☐☐☐	reduced	....	.....
☐ animal diversity	decreased	☐☐☐☐☐☐☐	increased	....	.....
☐ beneficial species (predators, earthworms, pollinators)	decreased	☐☐☐☐☐☐☐	increased	....	.....
☐ harmful species (e.g. mosquitoes)	increased	☐☐☐☐☐☐☐	decreased		
☐ habitat diversity	decreased	☐☐☐☐☐☐☐	increased	....	.....
☐ pests/ diseases	decreased	☐☐☐☐☐☐☐	increased	....	.....
Climate and disaster risk reduction					
☐ flood impacts	increased	☐☐☐☐☐☐☐	decreased	....	.....
☐ landslides/ debris flows	increased	☐☐☐☐☐☐☐	decreased	....	.....
☐ drought impacts	increased	☐☐☐☐☐☐☐	decreased	....	.....
☐ impacts of cyclones, rain storms	incr.	☐☐☐☐☐☐☐	decreased	....	.....
☐ emission of carbon and greenhouse gases	increased	☐☐☐☐☐☐☐	reduced	....	.....
☐ fire risk	increased	☐☐☐☐☐☐☐	reduced	....	.....
☐ wind velocity	increased	☐☐☐☐☐☐☐	decreased	....	.....
☐ micro-climate	worsened	☐☐☐☐☐☐☐	improved	....	.....
Other ecological impacts					
☐ (specify):	……..	☐☐☐☐☐☐☐	.....	....	.....
☐ (specify):	……..	☐☐☐☐☐☐☐	.....	....	.....
☐ (specify):	……..	☐☐☐☐☐☐☐	.....	....	.....

Specify assessment of on-site impacts (measurements):

……

……

6.2 Off-site impacts the Technology has shown

				If possible, quantify before SLM	If possible, quantify after SLM	Comments/ specify
☐ water availability (groundwater, springs)	decreased	☐☐☐☐☐☐☐	increased	.....	.....	.....
☐ reliable and stable stream flows (incl. low flows)	reduced	☐☐☐☐☐☐☐	increased	.....	.....	.....

☐ downstream flooding[1]	increased	☐ ☐ ☐ ☐ ☐ ☐ ☐	reduced	....	....	....
☐ downstream siltation[1]	increased	☐ ☐ ☐ ☐ ☐ ☐ ☐	decreased	....	....	....
☐ groundwater/ river pollution	increased	☐ ☐ ☐ ☐ ☐ ☐ ☐	reduced	....	....	....
☐ buffering/ filtering capacity (by soil, vegetation, wetlands)	reduced	☐ ☐ ☐ ☐ ☐ ☐ ☐	improved	....	....	....
☐ wind transported sediments	increased	☐ ☐ ☐ ☐ ☐ ☐ ☐	reduced	....	....	....
☐ damage on neighbours' fields	increased	☐ ☐ ☐ ☐ ☐ ☐ ☐	reduced	....	....	....
☐ damage on public/ private infrastructure	increased	☐ ☐ ☐ ☐ ☐ ☐ ☐	reduced	....	....	....
☐ impact of greenhouse gases	increased	☐ ☐ ☐ ☐ ☐ ☐ ☐	reduced	....	....	....
Other off-site impacts						
☐ Specify:..........................	....	☐ ☐ ☐ ☐ ☐ ☐ ☐	....	....	....	....
☐ Specify:	....	☐ ☐ ☐ ☐ ☐ ☐ ☐	....	....	....	....
☐ Specify:	....	☐ ☐ ☐ ☐ ☐ ☐ ☐	....	....	....	....

[1] *Downstream flooding and downstream siltation can be desired or undesired. Please specify in comments column and indicate whether an increase is positive or negative.*

Specify assessment of off-site impacts (measurements): ....

....

6.3 Exposure and sensitivity of the Technology to gradual climate change and climate-related extremes/ disasters (as perceived by land users)

Indicate gradual changes in climate and climate-related extremes as observed by land users in the last 10 years (trend).
Note*: for a more detailed assessment, fill in questionnaire module on climate change adaptation.*

Several answers possible.

Tick all gradual changes in climate and climate-related extremes/ disasters to which the Technology is exposed			***How does the Technology cope with these changes and disasters in view of achieving its main purposes (as defined in 3.1)?***					
Type of climatic change/ extreme	*increase*	*decrease*	*very poorly*	*poorly*	*moderately*	*well*	*very well*	*not known*
Gradual climate change								
☐ annual temperature	☐	☐	☐	☐	☐	☐	☐	☐
☐ seasonal temperature								
indicate season[1]:	☐	☐	☐	☐	☐	☐	☐	☐
....	☐	☐	☐	☐	☐	☐	☐	☐
....	☐	☐	☐	☐	☐	☐	☐	☐
....	☐	☐	☐	☐	☐	☐	☐	☐
☐ annual rainfall	☐	☐	☐	☐	☐	☐	☐	☐
☐ seasonal rainfall								
indicate season[1]:	☐	☐	☐	☐	☐	☐	☐	☐
....	☐	☐	☐	☐	☐	☐	☐	☐
....	☐	☐	☐	☐	☐	☐	☐	☐
....	☐	☐	☐	☐	☐	☐	☐	☐
☐ other gradual climate change (specify):			☐	☐	☐	☐	☐	☐

…….							
Climate-related extremes (disasters) [2]							
Meteorological disasters:							
☐ tropical storm (cyclone, typhoon, hurricane)	☐	☐	☐	☐	☐	☐	
☐ extra-tropical cyclone (winter storm)	☐	☐	☐	☐	☐	☐	
☐ local rainstorm	☐	☐	☐	☐	☐	☐	
☐ local thunderstorm	☐	☐	☐	☐	☐	☐	
☐ local hailstorm	☐	☐	☐	☐	☐	☐	
☐ local snowstorm	☐	☐	☐	☐	☐	☐	
☐ local sandstorm/ dust storm	☐	☐	☐	☐	☐	☐	
☐ local windstorm	☐	☐	☐	☐	☐	☐	
☐ local tornado	☐	☐	☐	☐	☐	☐	
Climatological disasters:							
☐ heatwave	☐	☐	☐	☐	☐	☐	
☐ cold wave (any time of the year, e.g. frost)	☐	☐	☐	☐	☐	☐	
☐ extreme winter conditions	☐	☐	☐	☐	☐	☐	
☐ drought	☐	☐	☐	☐	☐	☐	
☐ forest fire	☐	☐	☐	☐	☐	☐	
☐ land fire (grass, shrub, bush)	☐	☐	☐	☐	☐	☐	
Hydrological disasters:							
☐ general (river) flood	☐	☐	☐	☐	☐	☐	
☐ flash flood	☐	☐	☐	☐	☐	☐	
☐ storm surge/ coastal flood	☐	☐	☐	☐	☐	☐	
☐ landslide / debris flow	☐	☐	☐	☐	☐	☐	
☐ avalanche	☐	☐	☐	☐	☐	☐	
Biological disasters:							
☐ epidemic diseases (viral, bacterial, fungal, parasitic)	☐	☐	☐	☐	☐	☐	
☐ insect/ worm infestation (grasshoppers/ locusts/ worms, etc.)	☐	☐	☐	☐	☐	☐	
Other climate related extremes/ disasters:	☐	☐	☐	☐	☐	☐	
☐ *(specify):……..*							
Other climate-related consequences							
☐ extended growing period	☐	☐	☐	☐	☐	☐	
☐ reduced growing period	☐	☐	☐	☐	☐	☐	
☐ sea level rise (gradual change)	☐	☐	☐	☐	☐	☐	
☐ other (specify):……	☐	☐	☐	☐	☐	☐	

[1] *For **temperate, boreal, and polar/ arctic climate** choose: winter, spring, summer, and autumn;*
*For **tropics and subtropics** choose: wet/ rainy season, dry season.*

[2] ***Source:** Disaster Category Classification and Peril Terminology for Operational Purposes. CRED and Munich RE. 2009. Working Paper. 'Rainstorm' was added to replace 'generic (severe) storm', hailstorm was added, and the disaster subtypes 'rockfall', 'subsidence' and 'animal stampede' were left out*

Comments: .....

.....

6.4 Cost-benefit analysis

Refer to questions 4.4 and 4.6 (where costs for establishment and maintenance have been specified).

How do the benefits compare with the <u>establishment costs</u> (from the land user's perspective)?

	very negative	negative	slightly negative	neutral/ balanced	slightly positive	positive	very positive
short-term returns:	○	○	○	○	○	○	○
long-term returns:	○	○	○	○	○	○	○

How do the benefits compare with the <u>maintenance/ recurrent costs</u> (from the land user's perspective)?

	very negative	negative	slightly negative	neutral/ balanced	slightly positive	positive	very positive
short-term returns:	○	○	○	○	○	○	○
long-term returns:	○	○	○	○	○	○	○

Short term: *1-3 years;* ***long term:*** *10 years*

Comments: .....

.....

6.5 Adoption of the Technology

Note: *For information on adoption barriers and adoption drivers (motivation of land users to implement the Technology), refer to the WOCAT Questionnaire on SLM Approaches.*

How many land users in the area have adopted/ implemented the Technology?
Area: *Refer to the country/ region/ locations defined in 2.5 and to the land use types described in 3.2.*

○ single cases/ experimental ○ 1-10% ○ 10-50% ○ more than 50%

If available, quantify (no. of households and/ or area covered): .....

Of all those who have adopted the Technology, how many have did so spontaneously, i.e. without receiving any material incentives/ payments? ○ 0-10% ○ 10-50% ○ 50-90% ○ 90-100%

Comments: .....

.....

6.6 Adaptation

Adaptation: *recent modifications made by land users to suit local context and changing conditions (Source: WOCAT).*

Only one answer possible.

Has the Technology been modified recently to adapt to changing conditions?

○ No
○ Yes

If yes, indicate to which changing conditions it was adapted:
Only one answer possible.

○ climatic change/ extremes
○ changing markets
○ labour availability (e.g. due to migration)
○ other (specify): ……

Specify adaptation of the Technology (design, material/ species, etc.)

.....

.....

6.7 Strengths/ advantages/ opportunities of the Technology

Give a concluding statement about the Technology. Differentiate between the perspectives of land users and key resource persons.

From the perspective of the **land user**[1]:

1).....

.....

2).....

.....

3).....

.....

4).....

.....

From the perspective of the **compiler or other key resource persons**:

1).....

.....

2).....

.....

3).....

.....

4).....

.....

[1] ***Land user****: the person/ entity who implements/ maintains the Technology, including individual small- or large-scale farmers, groups (gender, age, status, interest), cooperatives, industrial companies (e.g. mining), government institutions (e.g. state forest), etc.*

6.8 Weaknesses/ disadvantages/ risks of the Technology and ways of overcoming them

Weaknesses/ disadvantages/ risks	***How can they be overcome?***
From the perspective of the **land user**[1]:	
1)..	1).....
....	.....
.....	.....
2)..	2) .....
....	.....
.....	.....
3)..	3) .....
....	.....
.....	.....
4)..	4) .....
....	.....
.....	.....

From the perspective of the **compiler or other key resource persons**:	
1)..	1) .....
....	.....
.....	.....
2)..	3) .....
....	.....
.....	.....
3)..	3) .....
....	.....
.....	.....
4)..	4) .....
....	.....
.....	.....

7. References and links

Indicate sources of information used for the compilation of information in this questionnaire.

7.1 Methods/ sources of information

Which of the following methods/ sources of information were used?

Several answers possible.	Specify (e.g. number of informants):
☐ field visits, field surveys	.....
☐ interviews with land users	.....
☐ interviews with SLM specialists/ experts	.....
☐ compilation from reports and other existing documentation	.....
☐ other (specify):	.....

Date of data collection (in the field)? ……

Comments: .....

.....

7.2 References to available publications

List relevant publications relating to the Technology (reports, manuals, training materials, case studies, etc.). Upload the publications that are available as soft copies to the database.

Title, author, year, ISBN	Available from where? Costs?
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

7.3 Links to relevant information that is available online (e.g. publications, reports, videos, etc.)

Title/ description	URL
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

7.4 General comments (e.g. feedback on the questionnaire or database, or general remarks.)

.....

.....

.....

.....

8. ANNEX

LUT lists (WOCAT IPCC combined)

Name (WOCAT)
Annual crops
cereals – barley
cereals – maize
cereals – millet
cereals – oats
cereals – buckwheat
cereals – other
cereals – quinoa or amaranth
cereals – rice (wetland)
cereals – rice (upland)
cereals – rye
cereals – sorghum
cereals – wheat (winter)
cereals – wheat (spring)
fibre crops – cotton
fibre crops – flax, hemp, other
flower crops – roses, tulips, other
fodder crops – alfalfa
fodder crops – clover
fodder crops – grasses
fodder crops – other
legumes and pulses – beans
legumes and pulses – lentils
legumes and pulses – other
legumes and pulses – peas
legumes and pulses – soya
medicinal/ aromatic/ pesticidal plants
herbs
oilseed crops – castor
oilseed crops – groundnuts
oilseed crops – sunflower, rapeseed, other
root/tuber crops – potatoes
root/tuber crops – cassava
root/tuber crops – sugar beet
root/tuber crops – sweet potatoes
root/tuber crops – taro, yams, cocoyam
root/tuber crops – other
seed crops – sesame, poppy, mustard, other
tobacco
vegetables – Jerusalem artichoke
vegetables – tomatoes
vegetables – onions, leeks, garlic, shallots
vegetables – gourds (cucumber, zucchini)
vegetables – aubergine/ eggplant
vegetables – leafy vegetables (various types of lettuce, cabbage, spinach, other)
vegetables – melon, pumpkin, squash
vegetables – mushrooms and truffles
vegetables – other
vegetables – root vegetables (carrots, onions, beets, other)
Annual cropping systems (IPCC)
Continuous wheat/ barley/ oats/ upland rice
Fallow – wheat/ barley/ oats/ upland rice
Continuous maize/ sorghum/ millet
Fallow – maize/ sorghum/ millet
Maize/ sorghum/ millet legume
Maize/ sorghum/ millet intercropped with legume
Fallow – maize/ sorghum/ millet intercropped with legume

Continuous wetland rice
Wetland rice – wheat
Continuous vegetables
Vegetables – wheat/ barley/ oat/ upland rice
Continuous cotton/ tobacco
Vegetable – cotton/ tobacco
Continuous root crop
Cassava/ potato/ manioc – vegetable
Cassava/ potato/ manioc – wheat/ barley/ oat
Cassava/ potato/ manioc – maize/ sorghum/ millet
Hay
Wheat or similar rotation with hay/ pasture
Maize or similar rotation with hay/ pasture
Perennial crops / grasses
Banana/ plantain/ abaca
Passiflora – passion fruit, maracuja
Agave/ sisal
Areca
Berries
Sugar cane
Pineapple
Flower crops – perennial
Medicinal, aromatic, pesticidal plants – perennial
Herbs
Chili, capsicum
Fodder crops – grasses
Fodder crops – legumes, clover
Non-fodder grasses – e.g. for thatching or stabilization (vetiver)
Natural grasses
Tree/ shrub crops
Avocado
Citrus
Cacao
Cactus, cactus-like (e.g. opuntia)
Coconut (fruit, coir, leaves, etc.)
Coffee, open grown
Coffee, shade grown
Dates
Mango, mangosteen, guava
Oil palm
Papaya
Pome fruits (apples, pears, quinces, etc.)
Rubber
Stone fruits (peach, apricot, cherry, plum, etc)
Tea
Tree nuts (brazil nuts, pistachio, walnuts, almonds, etc.)
Wolfberries
Carob
Cashew
Cinnamon
Figs
Fruits, other
Fruits – kiwi
Fruits – tamarind
Fruits – pomegranate
Grapes
Gums
Jojoba
Cork oak
Caragana
Kapok
Argan
Karite (Shea nut)
Chat
Olive
Tallow tree

Tung
Fodder trees (Calliandra, Leucaena leucocephala, Prosopis, Fraxinus dimorpha etc.)
Tree types
Acacia albida
Acacia auriculiformis
Acacia mearnsii
Acacia mellifera
Acacia nilotica
Acacia senegal
Acacia seyal
Acacia species
Acacia tortilis
Acer species (e.g. maple)
Ailanthus excelsa
Ailanthus species
Araucaria angustifolia
Araucaria cunninghamii
Balanites aegyptiaca
Bamboo bamboo
Casuarina equisetifolia
Casuarina junghuhniana
Cedrus species
Cordia alliadora
Cupressus lusitanica
Cupressus species
Dalbergia sissoo
Eucalyptus camaldulensis
Eucalyptus deglupta
Eucalyptus globulus
Eucalyptus grandis
Eucalyptus robusta
Eucalyptus saligna
Eucalyptus species
Eucalyptus urophylla
Erythrina species
Hevea brasiliensis (rubber tree)
Abies species (fir)
Gmelina arborea
Hevea brasiliensis
Khaya species
Larix species (larch)
Leucaena leucocephala
Mimosa scabrella
Pinus species (pine)
Pinus caribaea v. caribaea
Pinus caribaea v. hondurensis
Pinus oocarpa
Pinus patula
Pinus radiata
Pinus species
Populus species
Salix species
Haloxylon species
Juniperus species
Sclerocarya birrea
Picea species (spruce)
Swietenia macrophylla
Tectona grandis
Tectona species
Terminalia ivorensis
Terminalia superba
Xylia xylocapa
Ziziphus mauritiana
Azadirachta indica
Grevillea robusta
Forest types

Natural forests
boreal coniferous forest natural vegetation
boreal mountain systems natural vegetation
boreal tundra woodland natural vegetation
subtropical desert natural vegetation
subtropical dry forest natural vegetation
subtropical humid forest natural vegetation
subtropical mountain systems natural vegetation
subtropical steppe natural vegetation
temperate continental forest natural vegetation
temperate desert natural vegetation
temperate mountain systems natural vegetation
temperate oceanic forest natural vegetation
temperate steppe natural vegetation
tropical desert natural vegetation
tropical dry forest natural vegetation
tropical moist deciduous forest natural vegetation
tropical mountain systems natural vegetation
tropical rainforest natural vegetation
tropical shrubland natural vegetation
Plantation
boreal coniferous forest plantation
boreal mountain systems plantation
boreal tundra woodland plantation
subtropical dry forest plantation
subtropical dry forest plantation – Eucalyptus spp.
subtropical dry forest plantation – ~~other~~ broadleaf
subtropical dry forest plantation – Pinus spp.
subtropical dry forest plantation – Tectona grandis
subtropical humid forest plantation – broadleaf
subtropical humid forest plantation – Eucalyptus spp.
subtropical humid forest plantation ~~– other~~
subtropical humid forest plantation – Pinus spp.
subtropical humid forest plantation – Tectona grandis
subtropical mountain systems plantation – broadleaf
subtropical mountain systems plantation – Eucalyptus spp.
subtropical mountain systems plantation~~– other~~
subtropical mountain systems plantation – Pinus spp.
subtropical mountain systems plantation – Tectona grandis
subtropical steppe plantation
subtropical steppe plantation – broadleaf
subtropical steppe plantation – coniferous
subtropical steppe plantation – Eucalyptus spp.
subtropical steppe plantation – Pinus spp.
subtropical steppe plantation – Tectona grandis
Ssbtropical shrubland plantation
temperate continental forest plantation
temperate mountain systems plantation
temperate oceanic forest plantation
temperate steppe plantation
tropical dry forest plantation – broadleaf
tropical dry forest plantation – Eucalyptus spp.
tropical dry forest plantation
tropical dry forest plantation – Pinus spp.
tropical dry forest plantation – Tectona grandis
tropical moist deciduous forest plantation – broadleaf
tropical moist deciduous forest plantation – Eucalyptus spp.
tropical moist deciduous forest plantation
tropical moist deciduous forest plantation – Pinus spp.
tropical moist deciduous forest plantation – Tectona grandis
tropical mountain systems plantation – broadleaf
tropical mountain systems plantation – Eucalyptus spp.
tropical mountain systems plantation
tropical mountain systems plantation – Pinus spp.
tropical mountain systems plantation – Tectona grandis
tropical rain forest plantation
tropical rain forest plantation – broadleaf

tropical rain forest plantation – Eucalyptus spp.
tropical rain forest plantation – Pinus spp.
tropical rain forest plantation – Tectona grandis
tropical shrubland plantation
tropical shrubland plantation – broadleaf
tropical shrubland plantation – Eucalyptus spp.
tropical shrubland plantation – Pinus spp.
Livestock
Cattle – dairy
Cattle – non-dairy beef
Cattle – dairy and beef (e.g. Zebu)
Cattle – non-dairy working
Buffalo
Swine
Goats
Camels, dromedaries
Horses
Mules and asses
Sheep
Poultry
Rabbits and similar mammals
Beekeeping, apiculture
Wildlife – large herbivores
Wildlife – small herbivores
Livestock – other large
Livestock – other small
Fish
Grazing land: product / service type
Meat
Milk
Eggs
Wool
Skins/ hides
Transport/ draught
Manure as fertilizer / energy production
Economic security, investment, prestige